

# Model Distributions of Rare Species using Approximate SDMs based on Borrowed Strength from Other Species' SDMs

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## Abstract

Species Distribution Model (SDM) is a useful tool for conserving rare species. However, the 'rare species modeling paradox' presents challenges in modeling the rarest species, such as *Corybas* species, which have a narrow distribution and are known only from a few localities, making them difficult to model using conventional methods. An Approximate SDM (ASDMs) method was developed specifically for these species, employing a subtraction formula weighted by niche overlap metrics. This method was created in the hope that other rare species with between 5-20 occurrence records could also be modeled in the future. Our ASDMs demonstrated a good fit with directly modeled SDMs and successfully predicted the distributions of rare species with very few occurrence records. Hence, ASDMs present a promising and user-friendly approach for modeling potential distributions of rare species.

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